

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

A49.9
R312C
cgs 2

8 file

CA-44-47
February 1962

United States Department of Agriculture
Agricultural Research Service
Animal Husbandry Research Division

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

VALUE AND USE OF RABBIT MANURE 1/

AUG 19 1965

Robert B. Casady, Superintendent
Rabbit Experiment Station
Fontana, California

C & R-PREP.

The use of animal manures has long been recognized as an important means of improving the fertility of the soil to obtain maximum crop yields. The nitrogen, phosphoric acid, potash, and other chemical elements and the large number of bacteria contained in animal manures enrich the soil and the organic matter increases its moisture-holding properties.

The manure of an animal will vary in composition with the kind of ration fed, the quantity of straw, bedding, soil, water, or other material contained therein, and the extent of fermentation and decay. The manures of different animals also vary in value. These variations within and between classes of animals are indicated in Table 1.

TABLE 1 - Fertilizing constituents (in percentages) in different animal manures 1/

Animal	Water	Nitrogen	Phosphoric acid	Potash
Horse	49-76	0.5-0.7	0.3-0.5	0.2-0.6
Dairy Cattle	75-79	0.4-0.6	0.2-0.3	0.4-0.6
Fattening Cattle	78-84	0.3-0.7	0.2-0.5	0.2-0.5
Sheep	59-66	0.7-1.1	0.3-0.5	0.2-1.1
Swine	74-82	0.5-0.8	0.3-0.5	0.3-0.5
Chickens	55-75	1.0-2.0	0.8-2.0	0.4-0.9

1/ Compiled from tables in Morrison (1948), Anderson (1957), Rodale (1960), Pitt (1947), Fletcher (1942).

1/ Formerly A.H.D. No. 89 by G. S. Templeton, retired, issued by Bureau of Animal Industry, September 1946.

COMPOSITION OF RABBIT MANURE

In general, rabbit manure has a high nitrogen content. When rabbits are fed a pelleted ration, or one composed of recleaned grains, a good quality legume hay, and succulent green feed, the manure is relatively free of noxious weed seeds. It will not burn lawns or plants and is easy to incorporate in the soil. Hence, it is satisfactory for use on gardens and lawns and about flowering plants, shrubbery, and trees.

Weather conditions in the Southwestern United States, particularly in California, differ from those in other parts of the country. Because of the extremely dry climate and the scanty rainfall, manures have a low water content and retain practically all their nitrogen, phosphoric acid, and potash. Rabbits fed rations containing a good quality legume hay (alfalfa, clover, sweet clover, lespedeza, cowpea, vetch, kudzu, soybean, or peanut), and a plant protein supplement (soybean, peanut, or linseed meal) will produce a high-grade manure that, if carefully handled, will probably contain about 2 percent nitrogen.

The analyses of manure samples from rabbits that had been fed a pelleted ration composed of cereal grains, a plant protein supplement, and good quality alfalfa hay at the United States Rabbit Experiment Station and other southern California rabbitries are given in Table 2.

TABLE 2 - Percentages of fertilizing constituents of various
samples of rabbit manure

Sample	Water	Organic matter	Nitrogen	Phosphoric acid	Potash
Clean, air-dried (1929)	(1)	(1)	1.7	1.3	1.2
Clean, air-dried (1942)	31.40	(1)	1.4	1.8	0.5
Clean, air-dried (1946)	5.60	91.30	2.4	1.4	0.6
Clean, air-dried (1946)	(1)	(1)	2.2	1.4	0.8
Mixed with waste, taken from manure pit (1946)	35.01	40.72	1.8	(1)	(1)
Clean, moisture-free (1959)	(1)	85.60	2.8	0.7	1.1

(1) Not determined.

Since the advent of raising worms beneath rabbit hutches to remove odors, reduce the fly population, and eliminate the labor involved in daily cleanups, it is interesting to note what effect the passage of the manure through the worm's digestive tract has on the fertilizing constituents of rabbit manure (Table 3).

TABLE 3 - Percentages of fertilizing constituents of rabbit manure after digestion and excretion by earthworms

Moisture-free sample	Ash	Organic matter	Nitrogen	Phosphoric acid	Potash
Fresh (1959)	73.1	26.9	1.3	0.9	0.6
Aged (1959)	70.3	29.7	1.6	0.9	0.6

The figures in Table 3 were taken from three samples from two different sources. Although additional sampling is needed to get a more accurate analysis, the results indicate that the worms consume the organic matter and leave a high ash content, as compared to the 1959 sample in Table 2. Also, the nitrogen content of worm-worked rabbit manure (Table 3) tends to be lower than that indicated for fresh, or raw, manure (Table 2) because part of the protein is used by the worms.

VALUE

A comparison of Tables 1 and 2 would suggest that rabbit manure is drier than that of other farm animals, has a higher nitrogen and phosphorous content, and about the same potash content.

Some years ago (1929-1942) a test covering 13 years was conducted on a 5-acre orange grove at the United States Rabbit Experiment Station, Fontana, Calif. to determine the value of rabbit manure compared with chicken, hog, and steer manures as a fertilizer for citrus groves. It was found to be entirely satisfactory for that purpose, and its nitrogen-content value was equal to that of chicken, hog, and steer manures.

QUANTITY PRODUCED

The quantity of manure produced by rabbits will vary with the size of the breed, the ages of the animals, and the kind of ration fed. A 10-12 pound doe and her 28 young will yield about 6 cubic feet of clear manure in a year; a 10-12 pound herd buck or a dry doe will produce about 3 cubic feet of clear manure a year. When the waste bedding from the nest boxes and the waste hay and straw around the rabbitry are added to the clear manure, the quantity obtained from a 10-12 pound doe and her four litters will be increased to 9 cubic feet and that from a herd buck or dry doe to 5 cubic feet.

The weight of a cubic foot of clear rabbit manure may vary greatly, depending on the quantity of moisture it contains. In California, a cubic foot of fresh, clear manure weighs about 28 pounds, and when air-dried about 16 pounds. Hence, 125 cubic feet of the air-dried would weigh a ton. In regions where there is more moisture the weight of the air-dried product would be considerably more. When the clear manure is mixed with straw and waste hay from the rabbitry and the mixture contains considerable moisture, a cubic foot may weight 40 pounds.

CARE AND USE

The value of rabbit manure depends on how the product is cared for and used. Less loss of the fertilizing elements occurs, if the material is applied directly to and immediately incorporated with the soil. When the manure is stored in piles and exposed to the weather, there will be a considerable loss in chemicals through leaching and heat. Much of this loss can be prevented if the manure is incorporated in a compost heap or put in a bin or pit. There are several methods of composting, or treating rabbit manure to provide a humus or concentrated fertilizer. The reader should refer to current rabbit journals and other references for methods which suit his particular needs.

For general purposes, a simple composting method is presented as follows: Spread a layer, 3 to 12 inches deep, of lawn-grass cuttings, leaves, small-tree prunings, hedge trimmings, waste trimmings from garden vegetables, and weeds. Do not include diseased vegetables. Cover with a layer of rabbit manure 3 to 12 inches deep. Alternate the layers as materials become available. Tramp the compost thoroughly to exclude the air, and add just enough water to make the pile moist but not enough to cause seepage. If any smoking occurs, it is an indication that the mixture is becoming heated. Fork over the pile, tramp it down thoroughly, and add moisture. A 3- or 4-inch layer of soil on top of the heap will help to conserve the nitrogen and to control odors. A small quantity of superphosphate or gypsum will increase the fertilizing value and act as a fly repellent. A cover will prevent leaching.

Rabbit manure is a valuable fertilizer especially as a nitrogen source and should be cared for properly. Rabbit manure is excellent for the garden.

REFERENCES

- Anderson, M. S. Farm manure. U. S. D. A. Yearbook of Agr., 1957.
- Fletcher, C. C. Rabbit manure as a fertilizer. U. S. Dept. of the Interior, Wildlife Leaflet 216, April 1942. (Out of print.)
- Morrison, F. B. Feeds and feeding, 20th Ed., p. 644. Morrison Publishing Co., Ithaca, N. Y., 1948.
- Pitt, H. Manure will pay the mortgage. Anchor Lithographing Co., Kansas City, Mo., 1947.
- Rodale, J. I. The complete book of composting. Rodale Books, Inc., Emmaus, Penn. 1960.